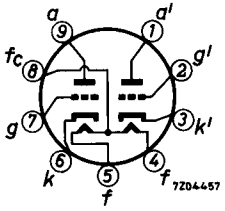
S.Q. TUBE

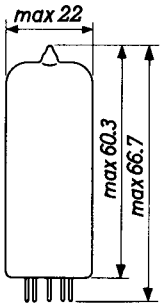
Special quality double triode designed for use in computer circuits.

QUICK REFERENCE DATA			
Life test	10 000 hours		
Low interface resistance			
Base	Noval		
Heating	Indirect A.C. or D.C.; Parallel supply		
Heater voltage	V_f	6.3 or 12.6	V
Heater current	I_f	640 or 320	mA
Anode current	I_a	36	mA
Mutual conductance	S	15	mA/V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





CHARACTERISTICS

Column I Nominal value or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

		I	II	III	
Heater voltage (pin 8 and 4+ 5)	V_f	6.3			V
Heater current	I_f	640	605- 675		mA
Heater voltage (pin 4 and 5)	V_f	12.6			V
Heater current	I_f	320			mA
Anode voltage	V_a	120			V
Grid voltage	$-V_g$	2			V
Anode current	I_a	36	26- 45		mA
Mutual conductance	S	15			mA/V
Amplification factor	μ	24			
Negative grid current	$-I_g$		max. 0.2	max.1.0	μA
Anode voltage	V_a	120			V
Cathode resistor	R_k	55			Ω
Mutual conductance	S	15	11.2-18.8	min. 8	mA/V
Anode voltage	V_a	90			V
Grid current	I_g	250			μA
Anode current	I_a		41- 62	min. 24	mA
Cut-off voltage	$-V_g$	14			V
Anode voltage	V_a	150			V
Anode current	I_a		max. 0.2		mA
Leakage current between cathode and heater Voltage between cathode and heater = 200 V	I_{kf}		max. 15	max. 30	μA
Insulation resistance between two electrodes			min. 100	min. 20	MΩ

CAPACITANCES Each system if applicable

		I	II	
Anode to cathode and heater	$C_{a/kf}$	1.1	0.75-1.45	pF
	$C_{a'/k'f}$	1.0	0.65-1.35	pF
Grid to cathode and heater	$C_{g/kf}$	6.0	5.3- 6.7	pF
Anode to grid	C_{ag}	4.0	3.4- 4.6	pF
	$C_{a'g'}$	4.1	3.4- 4.8	pF
Cathode to heater	C_{kf}	4.0		pF
Anode to anode other section	$C_{aa'}$	0.6	max. 0.8	pF
Grid to grid other section	$C_{gg'}$		max. 0.15	pF
Anode to grid other section	$C_{ag'}$		max. 0.1	pF

LIFE

Production samples are tested to be within the end of life values (column III) during 10 000 hours under the following conditions.

Anode supply voltage	V_{ba}	150	V
Anode resistor	R_a	1.5	kΩ
Grid supply voltage	V_{bg}	150	V
Grid resistor	R_g	62	kΩ
Voltage between cathode and heater (cath. neg.)	V_{kf}	120	V

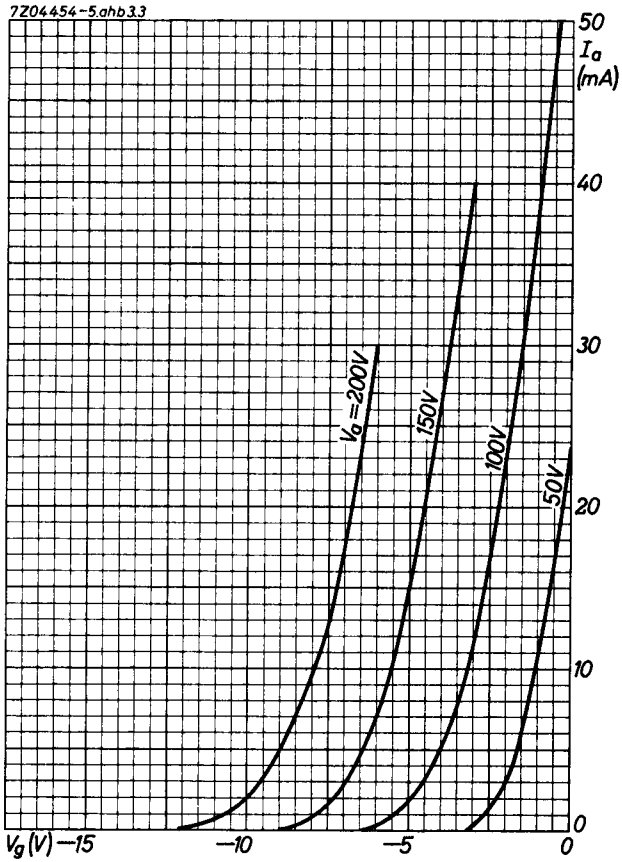
LIMITING VALUES (Absolute max. rating system)

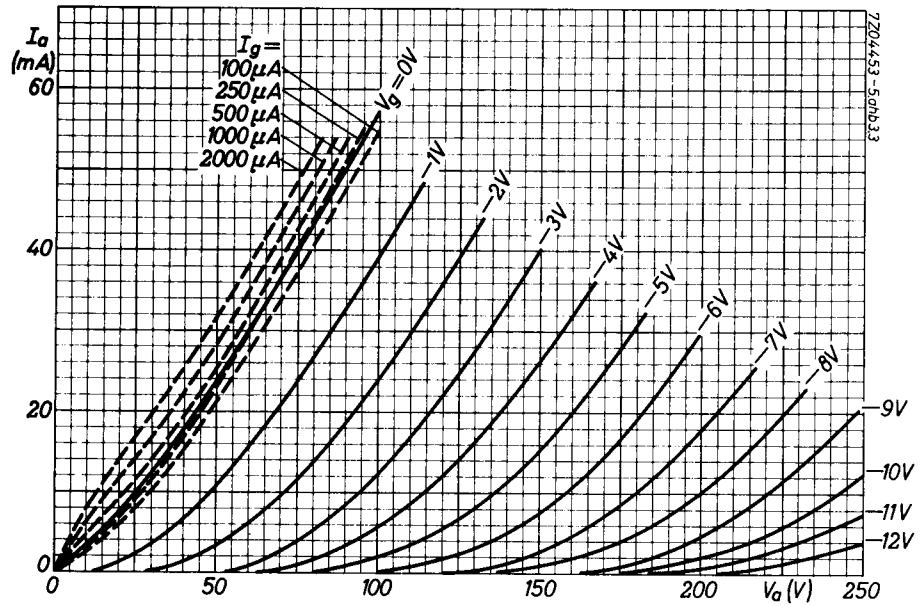
Anode voltage	V_{a_o}	max.	600	V
	V_a	max.	300	V
Anode dissipation	W_a	max.	4.5	W
Anode dissipation (both sections)	$W_{a+a'}$	max.	8.0	W
Grid voltage	$-V_g$	max.	100	V
	$+V_g$	max.	1	V

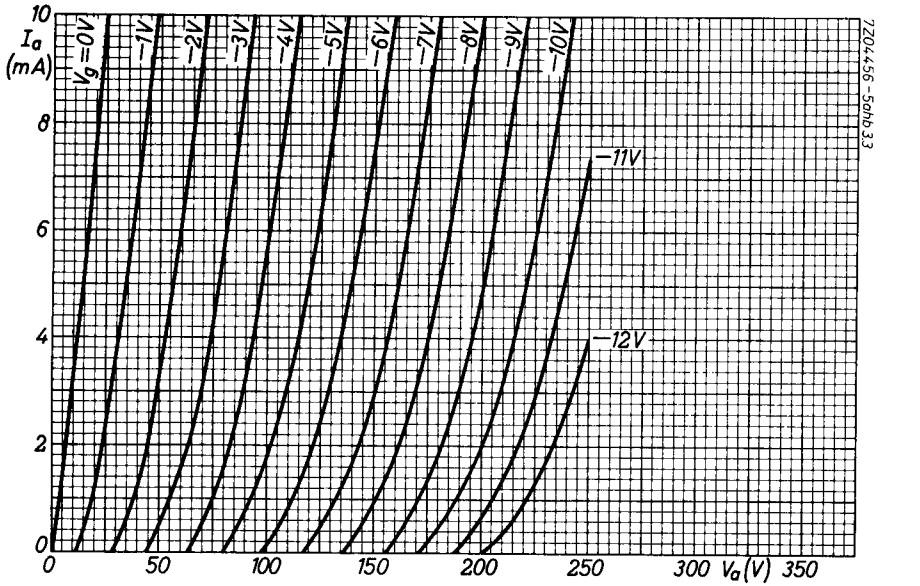
LIMITING VALUES (continued)

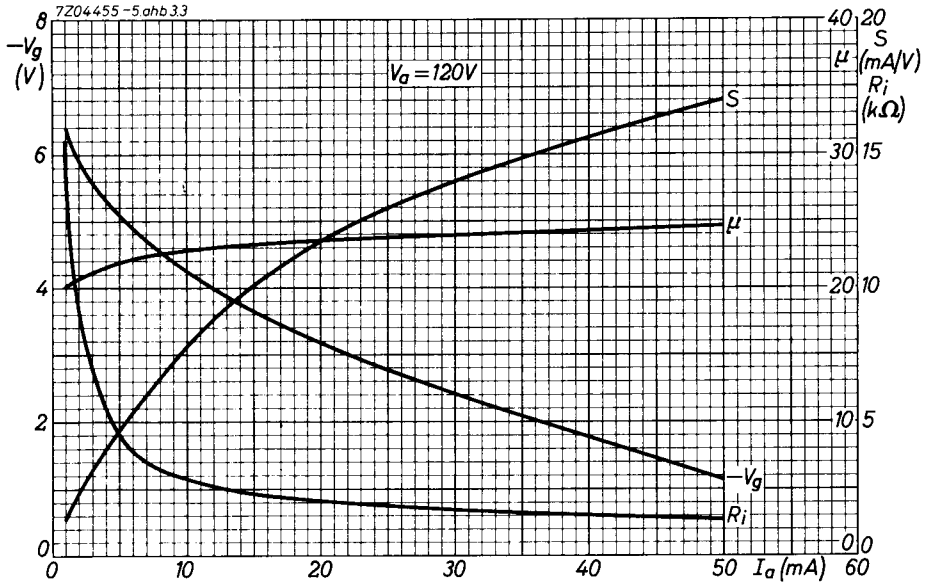
Grid voltage, peak	$+V_{gp}$	max.	30	V
	$-V_{gp}$	max.	200	V
Pulse duration max. 10 μs				
Duty factor max. 0.01				
Grid current	I_g	max.	8	mA
Grid peak current	I_{gp}	max.	200	mA
Pulse duration max. 10 μs				
Duty factor max. 0.01				
Cathode current	I_k	max.	60	mA
Cathode peak current	I_{kp}	max.	400	mA
Pulse duration max. 10 μs				
Duty factor max. 0.01				
Voltage between cathode and heater	V_{kf}	max.	200	V
d.c. component	V_{kf}	max.	120	V
Bulb temperature	t_{bulb}	max.	160	°C
Grid resistor with automatic bias	R_g	max.	1	MΩ
Grid resistor with fixed bias	R_g	max.	0.5	MΩ

Heater voltage: The average heater voltage should be 6.3/12.6 V.
Variations of the heater voltage exceeding the range of 6.0/12.0 V to 6.6/13.2 V will shorten the tube life.
The tolerance of heater current (column II) should be taken into account.


7Z04454-5.ahb3.3
50
I_a
(mA)
40
30
20
10
0
V_a=200V
150V
100V
50V
V_g(V) −15
−10
−5
0


I_a (mA)
60
40
20
0
I_g =
100 µA
250 µA
500 µA
1000 µA
2000 µA
V_g = 0V
−1V
−2V
−3V
−4V
−5V
−6V
−7V
−8V
−9V
−10V
−11V
−12V
0
50
100
150
200
V_a (V)
250
7Z04453-5ahb33


I_a (mA)
10
8
6
4
2
0
V_g = 0V
−1V
−2V
−3V
−4V
−5V
−6V
−7V
−8V
−9V
−10V
−11V
−12V
0
50
100
150
200
250
300
V_a (V)
350
7Z04456-5ahb33


7Z04455-5.ahb33
$-V_g$ (V)
$V_a = 120V$
S
μ
R_i
$-V_g$
I_a (mA)
S (mA/V)
R_i (kΩ)
0
2
4
6
8
10
20
30
40
50
60
5
15

PHILIPS

Data handbook

Electronic components and materials

E182CC

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3	3	1968.12
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8	FP	2000.12.04